

- [54] **COLLAGEN HYDROGEL FOR PROMOTING EPITHELIAL CELL GROWTH AND ARTIFICIAL LENS USING THE SAME**
[75] Inventor: **Linda Civerchia**, Ft. Lauderdale, Fla.
[73] Assignee: **CBS Lens**, Santa Maria, Calif.
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Primary Examiner—Alan W. Cannon
Attorney, Agent, or Firm—Daniel J. Meaney, Jr.

[57] **ABSTRACT**

A collagen-hydrogel for promoting epithelial cell growth is shown. Also shown is an optical lens for the eye, fabricated from the collagen-hydrogel, which, when affixed to Bowman's membrane, promotes and supports epithelial cells growth and enables corneal epithelium of the cornea of an eye, during the healing process, to attach to and cover the anterior surface of the lens implanting the same. The collagen-hydrogel is a hydrogel polymer formed by the free radical polymerization of a hydrophilic monomer solution gelled and crosslinked in the presence of an aqueous solution of macromolecules to form a three dimensional polymeric meshwork for anchoring macromolecules. Macromolecules comprising a constituent of a ground substance of tissue, which in the preferred embodiment is a native collagen, are interspersed within the polymeric network forming the hydrogel resulting in a collagen-hydrogel for promoting epithelial cell growth. A collagen-hydrogel lens fabricated from the collagen-hydrogel, when affixed to Bowman's membrane of the cornea of an eye by suturing or other similar surgical procedure, is capable of supporting and promoting cell growth of epithelial cells enabling corneal epithelium to attach to and cover the collagen-hydrogel lens. An artificial lens or contact lens produced from the collagen-hydrogel, during the healing process, is capable of eliminating rejection of and promoting the implantation of the artificial lens or contact lens between Bowman's membrane and corneal epithelium.

20 Claims, 3 Drawing Sheets

